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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/619,477 07/19/00 YAMAZAKI

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EXAMINER

KIELIN, E

ART UNIT

PAPER NUMBER

2813
DATE MAILED:

09/25/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/619,477

Applicant(s)

YAMAZAKI, SHUNPEI

Examiner

Erik Kielin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 July 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 July 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. Figure 30 is objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: the “conductive spacers 8” and the “adhesive 9 (resin)”. Correction is required.
3. Figure 30 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).
4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "186" has been used to designate both “the image signal driver” (p. 15 of specification; Fig. 1A) and “the sealing agent” (p. 16, line 4; Fig. 1B).

Similarly, reference character “173” is used to designate “a protection film” on page 31, line 6 and as “the alignment film” on page 32, in numerous locations. Correction is required.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: “103a” on p. 19 of the specification. Correction is required.

Specification

6. The disclosure is objected to because of the following informalities:
on page 15, line 17, after “205” insert --as shown in Figure 6A-- for clarity, and
on page 27, line 4, after “PM5” insert --(Fig. 6A)-- for clarity.

Appropriate correction is required.

7. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 2, 11, 22, 34, and 45 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The last sentence of page 3 of the specification, regarding the problem of the prior art use of resin in contact with the metal wiring, states "Furthermore, the side surface of the metallic film 3a is touching the resin in a state where the FPC 4 is mounted, causing a problem in protecting against moisture." Therefore, the specification indicates that resin should **not** be used as the "protecting film" in contact with the side of the metal which will, according to Applicant, not protect against moisture, contrary to the objective of protecting the metal film against corrosion. Furthermore, the metals indicated in the specification for use as the metal film, for example, molybdenum (Mo) and tungsten (W) are notoriously well known to those of ordinary skill to be easily corroded by moisture; thereby supporting the fact that resin will not protect such

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metal films. For further verification of this see US 6,043,859 (Maeda) at col. 4, ll. 19-27. For this reason, the use of a resin as a protecting film is not enabled because it does not provide the requisite protection, as admitted by Applicant, and as known in the art.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 11, 21, 33, and 44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. Claim 11 recites the limitation "the protecting film" in line 1. There is insufficient antecedent basis for this limitation in the claim.

13. Claims 21, 33, and 44 recites the limitation "the other substrate" in line 2. There is insufficient antecedent basis for this limitation in the claim.

14. Claims 21, 33, and 44 recites the limitation "the anisotropic conductive film" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(c) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

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16. Claims 1-3, 7, and 10, 12, 16, and 19-23, 27, 30, and 31-35, 39, 42 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,169,593 B1 (**Kanaya et al.**).

Kanaya discloses a first substrate having a circuit structured with a thin film transistor (TFT); a second substrate opposing said first substrate 21 which is a driving circuit board in one embodiment; a connecting wire formed of a metallic film 22 (gate signal wire; col. 8, ll. 25-29) and a transparent conductive film (TCF) 28 (source signal wire; col. 8, ll. 50-51) in contact with the metallic film surface for connecting said circuit structured with a TFT to another circuit using an anisotropic conductive film (ACF) 80a; and a protecting film 24 in contact with a side surface of said metallic film, wherein said connecting wiring and said protecting film 24 are formed over said first substrate 20. (See Figs. 2G and 2H; col. 9, ll. 13-40. See also , col. 18, ll. 24-51 and Figs. 15A-15B.) Note that the protecting film 24 is the same film insulating between 22 and 28 as shown in Fig. 2F (as claimed in instant claims 20 and 32).

In another embodiment as shown in Figs. 7E-7F, **Kanaya** discloses the metal film 26 with overlying TCF 28 and protecting film 30 formed of, for example, an acrylic resin, contacting a side surface of the metal film 26. (See also col. 14 -- esp. ll. 7-10, 45-67.)

17. Claims 1, 3-5 and 10, 12-15 and 19, 20, 23-25, 30 and 31, 32, 35-37, 42 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,636,329 (**Sukegawa et al.**).

The prior art Fig. 2A-2C of **Sukegawa** showing a terminal portion of an LCD display discloses a first substrate 1 having a circuit structured with a thin film transistor (TFT); a second substrate opposing said first substrate 31a which is a flexible wiring substrate; a connecting wire formed of a metallic film 7 and a transparent conductive film (TCF) 8 in contact with the metallic film surface for connecting said circuit structured with a TFT to another circuit using an

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anisotropic conductive film (ACF) 10; and a protecting film 3 in contact with a side surface of said metallic film 7, wherein said connecting wiring and said protecting film 7 are formed over said first substrate 1. (See also col. 3, ll. 9-33 and prior art Figs. 1A-1B.)

Fig. 4A-4B of **Sukegawa** discloses a first substrate 1 having a circuit structured with a thin film transistor (TFT); a second substrate opposing said first substrate 31 which is a flexible wiring substrate; a connecting wire formed of a metallic film 7 formed 140 nm thick from Cr, Al, W, etc. (col. 8, ll. 59-63) and a transparent conductive film (TCF) 8 in contact with the metallic film surface for connecting said circuit structured with a TFT (Fig. 3C) to another circuit using an anisotropic conductive film (ACF) 10; and a protecting film 3 in contact with a side surface of said metallic film 7, wherein said connecting wiring and said protecting film 7 are formed over said first substrate 1. Note also that at col. 7, ll. 40-44, **Sukegawa** states, "That is, the upper layer metal wiring 7 is protected at least by double coverage with a transparent conductive film 10 and further protected, locally, by coverage with a protective insulation film 9. (See also col. 3, ll. 9-33 and prior art Figs. 1A-1B.)

18. Claims 1-5, 7 and 10, 12-14, 16, and 19, 22-25, 27, 30 and 31, 33-37, 39, 42 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,608,559 (**Inada et al**).

The prior art Fig. 2 of **Inada**, showing a terminal portion of an LCD panel, discloses a first substrate 221 having a circuit structured with a thin film transistor (TFT); a second substrate opposing said first substrate 204 which is a flexible wiring substrate; a connecting wire formed of a 300-nm thick metallic film 209 formed at and a 80-nm thick transparent conductive film (TCF) 210 in contact with the metallic film surface for connecting said circuit structured with a TFT to another circuit using an anisotropic conductive film (ACF) 211; and a protecting film 211

in contact with a side surface of said metallic film 209, wherein said connecting wiring and said protecting film 211 are formed over said first substrate 1. (See col. 1, ll. 29-34.)

Fig. 6 of **Inada** discloses a similar embodiment to the prior art figure but shows the protective film 42 of silicon nitride on the side of the 300-nm thick metal film 29 with overlying 80-nm thick transparent conductive film 30 and anisotropic conductive film 36 (col. 8, ll. 50-51). (See also col. 7, ll. 10-30; col. 14, ll. 32-42; col. 4, ll. 24-34).

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claims 1-7, 10-15, 19-26, 31-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kanaya**.

Kanaya, as explained above, teaches each of the features of the claims except for forming the metal film from aluminum or tungsten or a laminate of tungsten and tungsten nitride. **Kanaya** does however teach provide an example of a tantalum/tantalum nitride (col. 17, ll. 44-48).

Examiner gives official notice that it is known to use aluminum and tungsten and laminates of a metal and its nitride, including tungsten, to form wiring layers. It has been held that selection of a known material based on its suitability for its intended use is *prima facie* obvious. See Sinclair & Carroll Co., Inc. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945). See also In re LESHIN, 125 USPQ 416 (CCPA 1960). It would have been obvious to one

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of ordinary skill at the time of the invention to use a known metal or metal and its nitride in a laminate to form a wiring layers, according to precedent.

21. Claims 43-50, 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kanaya** in view of JP 8-234212 A (**Hioki**).

Kanaya, as explained above, teaches each of the features of the claims except for forming column-shaped spacers over the TFTs, wherein the material used to form the spacers is the same material as that used to form the protective film.

Hioki teaches the benefits of forming column-shaped spacers 24 over the TFTs 22 using a resin. It would have been obvious to one of ordinary skill at the time of the invention to form spacers over the TFTs of **Hioki** and form them from resin for the reasons indicated in **Hioki** -- especially because forming the spacers over the TFTs provides uniform light over the pixels.

Because **Kanaya** teaches embodiments wherein the protecting film material is made from resin, both the spacers and the protecting film are formed from the same material.

22. Claims 43-48, 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sukegawa** in view of **Hioki**.

Sukegawa, as explained above, teaches each of the features of the claims except for forming column-shaped spacers over the TFTs, wherein the material used to form the spacers is the same material as that used to form the protective film.

Hioki teaches the benefits of forming column-shaped spacers 24 over the TFTs 22 using a resin. It would have been obvious to one of ordinary skill at the time of the invention to form spacers over the TFTs of **Hioki** and form them from resin for the reasons indicated in **Hioki** -- especially because forming the spacers over the TFTs provides uniform light over the pixels.

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Because **Sukegawa** teaches embodiments wherein the protecting film material is made from resin, both the spacers and the protecting film are formed from the same material.

23. Claims 1-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kanaya** in view of US 6,215,077 B1 (**Utsumi et al.**).

Kanaya is applied as above and teaches each of the features of the claims except for a laminate formed specifically of a metallic film comprising aluminum with an overlying indium zinc oxide transparent conductive oxide.

Utsumi teaches the benefits of using a laminate a metallic film 2b, 2c comprising aluminum layer 2b with overlying IZO 2a specifically for use on transparent substrates for LCDs. (See Abstract, col. 2, l. 45 to col. 3, l. 16; and especially col. 4, ll. 49-58.)

It would have been obvious to one of ordinary skill at the time of the invention to use the metallization scheme of **Utsumi** for the reasons in **Utsumi** -- at least to form a metallization free from hillocks which has a low resistance even though it incorporates a conductive metal oxide.

24. Claims 43-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kanaya** in view of **Utsumi** as applied to claims 1-42 above, and further in view of **Hioki**.

Kanaya in view of **Utsumi** is applied as above. **Hioki** is applied as above.

Conclusion

Any inquiry concerning this communication from examiner should be directed to Erik Kielin whose telephone number is (703) 306-5980 and e-mail address is erik.kielin@uspto.gov. The examiner can normally be reached by telephone on Monday through Thursday 9:00 AM until 7:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Bowers, can be reached at (703) 308-2417 or by e-mail at charles.bowers@uspto.gov. The fax phone number for the group is (703) 308-7722 or -7724.

EK

EK

September 20, 2001

Charles D. Bowers Jr.

Charles Bowers
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